

REMARKS

I. Summary of the Examiner's Action

A. Formal Matters

1. Claim Objections

In paragraph 1 of the Office Action, the Examiner objected to claims 9, 10, 11, 16, 17, 18, 27, 28, 29, 31, 32 and 33 as being in improper form because a multiple dependent claim cannot depend from any other multiple dependent claims.

2. Drawing Objections

In paragraph 27 of the Office Action, the Examiner objected to FIG. 1 as not complying with 37 CFR § 1.84(p)(5).

B. Claim Rejections

In paragraph 3 of the Office Action, the Examiner rejected claims 12 and 30 under 35 U.S.C. § 112, second paragraph as being indefinite in that they fail to point out what is included or excluded by the claim language. The Examiner characterized the claims as omnibus-type claims.

In paragraph 5 of the Office Action, the Examiner rejected claims 1, 2, 3, 7, 8, 13 – 15, 19 and 20 under 35 U.S.C. § 103(a) as being unpatentable over UK Patent Application Publication 2,314,487 to International Business Machines Corporation (hereinafter the "IBM reference") and

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United States Patent 5,916,287 to Arjomand *et al.* (hereinafter the “Arjomand patent”).

In paragraph 15 of the Office Action, the Examiner rejected claim 4 as being unpatentable over IBM and the Arjomand patent as applied to claims 2 and 3, and further in view of United States Patent No. 5,448,561 to Kaiser *et al.* (hereinafter the “Kaiser patent”).

In paragraph 16 of the Office Action, the Examiner rejected claims 5 and 6 under 35 U.S.C. § 103(a) as being unpatentable over IBM, Arjomand, and Kaiser as applied to claim 4 above, and further in view of United States Patent Number 6,157,935 to Tran *et al.* (hereinafter the “Tran patent”).

In paragraph 19 of the Office Action, the Examiner rejected claims 21, 22 and 24 under 35 U.S.C. § 103(a) as being unpatentable over IBM and Arjomand as applied to claims 13, 19 and 20 above, and further in view of United States Patent No. 6,385,210 to Overberg *et al.* (hereinafter referred to as the “Overberg patent”).

In paragraph 25 of the Office Action, the Examiner rejected claim 23 under 35 U.S.C. § 103(a) as applied to claim 22 above, and further in view of United States Patent No. 6,256,358 to Whikehart *et al.* (hereinafter the “Whikehart patent”).

These rejections are respectfully disagreed with, and are traversed below.

C. Claim for Priority

In paragraph 28, the Examiner acknowledged applicant's claim for priority based on an international (PCT) application filed on 10 April 1999. The Examiner noted that a certified copy of International Application PCT/GB00/01341 has not been filed as required by 35 U.S.C. § 119(b).

In paragraph 29, the Examiner acknowledged applicant's claim for priority under 35 U.S.C. 119(a)-(d) based on the International (PCT) application filed on 10 April 1999. The Examiner purported to claim that a claim for priority under 35 U.S.C. 119(a)-(d) cannot be based on said application, since the United States application was filed more than twelve months later.

II. Applicant's Response

A. Formal Matters

1. Claim Objections

Applicant has amended claims 9, 10, 11, 16, 27, 28, 29, 31, 32 and 33 to eliminate the previous situation where multiple dependent claims depended from other multiple dependent claims.

2. Drawing Objections

Applicant has amended the specification to include reference character 5, thereby obviating

the Examiner's objection to FIG. 1. Reference character 5 clearly refers to the substitute remote request feature (SRR) mentioned in the specification. No new matter is added by this amendment.

B. Claim Rejections

1. Rejection under 35 U.S.C. § 112, Second Paragraph

Applicant has amended claims 12 and 30 so that the claims are no longer omnibus-type claims, thereby overcoming the Examiner's rejection of these claims.

2. Rejections under 35 U.S.C. § 103(a)

Applicant respectfully submits that the Examiner has not set forth a prima facie case of obviousness. In particular, claim 1 as amended is reproduced here (emphasis added):

1. A method of transmission of data messages between a plurality of stations interconnected by a bus line, wherein each said message includes a frame portion representing content and priority information of the data message and a data portion representing data to be transmitted, the method comprising the steps of causing at least one of said plurality of stations to transmit a data message on to the bus line such that said frame portion thereof is transmitted at a first data transmission rate, and the data portion thereof is transmitted at a second data transmission rate not less than said first data transmission rate, and adjusting at least one of said first data transmission rate and said second data transmission rate in dependence on a signal quality determined for transmission on said bus line.

Claim 13 (as amended) is reproduced here (emphasis added):

13. Apparatus for transmitting data messages between a plurality of stations interconnected by a bus line, each of said data messages including a frame portion representing content and priority information of the data message and a data portion representing data to be transmitted, the apparatus comprising:

means for transmitting a data message on said bus line such that said frame portion thereof is transmitted at a first data transmission rate, and said data portion thereof is transmitted at a second data transmission rate not less than said first data transmission rate; and
means for adjusting at least one of said first data transmission rate and said second data transmission rate in dependence on a signal quality determined for transmission on said bus line.

Both claim 1 and 13 recite that the data and frame transmission rates may be different, and that the respective transmission rates are adjusted in dependence on a signal quality determined for transmission on said bus line.

In contrast to variation of the frame and data transmission rates in Applicant's invention, the IBM reference varies *symbol repetition rate* (whether in the frame or data portion):

In this scheme, each symbol is transmitted n times (hence the term

repetition coding) in the wireless channel. We refer to n as the repetition rate (R). The receiver in turn receives n symbols and makes a decoding decision. Now, as we increase n , the probability of receiving a symbol correctly increases and for a given bit-error-rate (BER) or signal-to-noise-ratio (SNR) at any receiver, one can find n in such a way that the probability of receiving a correct symbol is above a predefined level. As a result, the repetition rate R required to receive a symbol correctly with a predefined probability at a given receiver depends on the interference level at the receiver as well as its distance from the transmitter. Hence, since the SNR depends on the geographical placement and interference, the repetition rate necessary to achieve a given BER at a receiver is not fixed for all connections within a wireless network.

IBM reference, Page 1, lines 27 – 38 (emphasis added). Elsewhere:

The method of the present invention provides schemes to overcome this issue and increase the throughput while maintaining the reservation reliability as in a scheme where all symbols with control (or reservation) frames and /or Data frames are sent with a repetition rate R_{max} which is high enough that all terminals with the interference range can decode the symbols correctly with a high probability . . . The invention defines a scheme with similar reservation reliability as in the case where the full control packet or frame and/or data frames are sent with R_{max} while achieving a higher throughput. A media access and contention resolution scheme for using multirate wireless communication is described. In such an

environment, each physical layer frame is broken into two portions:
(1) the robust header portion which contains all symbols important to
the MAC protocol and media coordination and is sent with a
repetition rate R_{max} where R_{max} is selected in such a way that all
stations within the interference environment can decode the
reservation symbols with a desired probability; and (2) data symbols
which are sent with a repetition rate R where R can be less than
 R_{max} . Here R depends on the channel conditions at any destination
with respect to the source station transmitting such data symbols.

IBM reference, Page 2, line 40 – page 3, line 36 (emphasis added). And finally:

Since the repetition of each symbol results in a reduction of the
throughput, increasing link quality results in extending the packet
transmission time and reducing the link speed. Now, in light of the
above description, symbols that carry control information and have to
be heard by all stations are transmitted with the highest repetition rate
so that they are correctly received by all stations. On the other hand
the repetition rate of data symbols is selected using a rate selection
algorithm described below such that the data is received correctly
with a high probability at destination stations(s).

IBM reference, Page 4, lines 17 – 25 (emphasis added).

As claimed, Applicant's invention does not vary the symbol repetition rate as in the case of
the IBM reference. By providing method and apparatus for transmission of data messages, as set out

in claim 1 and 13, the receiving station requires less dynamic memory to process the incoming transmission. In contrast, in the IBM reference because control and data frames are sent at varied symbol repetition rates depending on operating conditions, sufficient memory is required at the receiving station to store the repeated messages while the frames are analyzed.

In the present invention, control and data frames are transmitted once, but at a sufficient rate to achieve reliable transmission. If they are not received, the message is simply retransmitted. As a result, the present invention overcomes the limitation of the prior art, including the IBM reference, associated with the amount of memory and processing necessary to receive and process a repetition-encoded signals. It is submitted that there is no description or suggestion in the IBM reference, or any of the other prior art, that providing a first data transmission rate (not repetition rate) which is lower than the second data transmission rate will provide a solution to this problem.

Accordingly, Applicant respectfully requests that the Examiner withdraw the rejection of claims 1 and 13 set forth in paragraph five of the Office Action. Since the remaining rejections in the case of the dependent claims are all premised on this base rejection, Applicant similarly requests that the Examiner withdraw the rejection of all dependent claims.

C. Claim for Priority

Applicant has amended the specification pursuant to 37 CFR 1.78(a)(2)(i) to refer to International Application PCT/GB00/01341. Applicant need not submit a petition and fee pursuant to 1.17(t) for the following reasons.

First, strictly speaking, Applicant is claiming benefit of the filing date of PCT/GB00/0134 under 35 U.S.C. § 120. An international application which designates the United States “shall have the effect, from its international filing date under article 11 of the treaty, of a national application for patent regularly filed in the Patent and Trademark Office except as otherwise provided in section 102(e) of this title.” 35 U.S.C. § 363. International Application PCT/GB00/0134 designates the United States, and is therefore accorded the status of a US national filing. As a result, Applicant must comply with the provisions of 35 U.S.C. § 120 in order to claim benefit of the filing date of International Application PCT/GB00/0134.

Applicant notes that the claim of benefit to the filing date of International Application PCT/GB00/01341 appeared in the application filing papers. The United States Patent and Trademark Office duly noted the claim of benefit, since both the Filing Receipt and the published application United States Patent Application Publication No. US 2002/0126691 A1 make reference to this information. In situations such as this where the Office has noted the benefit information the MPEP states:

If an applicant includes a claim to the benefit of a prior application elsewhere in the application but not in the manner specified in 37 CFR 1.78(a)(2)(i) and (a)(2)(iii) or 37 CFR 1.78(a)(5)(i) and (a)(5)(iii)(e.g., if the benefit claim is included in an unexecuted oath or declaration or the application transmittal letter) within the time period set forth in 37 CFR 1.78(a)(2)(ii) or (a)(5)(ii), the Office will not require a petition and the surcharge under 37 CFR 1.17(t) to correct the benefit claim if the information concerning the benefit claim concerning the benefit claim contained elsewhere in the application was recognized by the Office as shown by its inclusion on a filing receipt. This is because the application will have been scheduled for publication on the basis of such information concerning the benefit claim. Applicant must still submit the benefit claim in the manner specified in 37 CFR 1.78(a)(2)(i) and (a)(2)(iii) or 37 CFR 1.78(a)(5)(i) and (a)(5)(iii)(i.e., by an amendment in the first sentence of the specification or in an ADS) to have a proper claim under 35 U.S.C. 120 or 119(e) and 37 CFR 1.78 to the benefit of a prior application.

MPEP 201.11(V), page 200-64(emphasis added). Accordingly, in view of the foregoing provisions of the MPEP, Applicant need not submit a petition and the fee called for by 37 CFR 1.17(t). The Applicant has amended the specification to set forth the required information, and has submitted an Application Data Sheet identifying both International Application PCT/GB00/0134 and Great Britain Application No. 9908105.1. In addition, Applicant has enclosed a certified copy of Great Britain Application No. 9908105.1. Applicant has also requested a certified copy of International

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Application PCT/GB00/0134 and will forward it to the USPTO upon receipt.

III. Conclusion

The Applicant submits that in light of the foregoing amendments and remarks the application is now in condition for allowance. Applicant therefore respectfully requests that the outstanding rejections be withdrawn and that the case be passed to issuance.

Respectfully submitted,

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Date

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